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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,569	08/07/2001	Saburo Sugawara	1232-4750	6995

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MORGAN & FINNEGAN, L.L.P.
345 PARK AVENUE
NEW YORK, NY 10154

EXAMINER

CRUZ, MAGDA

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 10/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,569

Applicant(s)

SUGAWARA ET AL.

Examiner

Magda Cruz

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 21, 23 and 24 is/are rejected.
- 7) ☒ Claim(s) 5-20, 22, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 25 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in–

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

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(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 1-2, 21 and 23-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Okuyama.

Okuyama (US Patent Number 6,273,568 B1) discloses a color combining optical system (Figure 10) for combining light reflected by a dichroic film and color light transmitted through the dichroic film (column 13, lines 10-13), wherein an optical thickness of the dichroic film increases or decreases from one end side to the other end side (Figure 24) in an inclining direction of the dichroic film with respect to an incident optical axis of the color light reflected by the dichroic film (column 13, lines 12-14). The color combining optical system (Figure 1) wherein color-synthesizes a plurality of light beams from a plurality of image modulation means (column 5, lines 42-51), enlarging/projecting combined image light from said color combining optical system (column 6, lines 26-30). Color-separating means from a light source into a plurality of color beams (column 5, lines 58-61), having a plurality of image modulation means (7, 8, 9) illuminated with the plurality of color light beams (R, G, B).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuyama in view of Peng.

Okuyama (US Patent Number 6,273,568 B1) teaches the salient features of the present invention except a dichroic film wherein the refractive index increases or decreases from one end side to the other end side in the inclining direction and wherein the optical thickness increases as an incident angle of the reflected chromatic light increases.

Peng (US Patent Number 6,235,435 B1) discloses a dichroic film (24) wherein the refractive index increases or decreases from one end side to the other end side in the inclining direction (column 3, line 66 through column 4, line 1) and wherein the optical thickness increases as an incident angle of the reflected chromatic light increases (column 4, lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize the dichroic film disclosed by Peng, in combination with Okuyama's invention, for the purpose of increasing the image resolution.

Allowable Subject Matter

8. Claims 5-20, 22 and 25-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach an optical system, comprising in combination with the additionally recited elements, a color combining prism wherein a dichroic prism is formed at the inside of said color combining prism; wherein $|L_{in}/L| > 4$ is satisfied, where L_{in} is a distance from an incident pupil of said entire overall image projection optical system including said projection optical system, said color combining prism, and said positive refracting optical element to a display portion of said image modulation means, and L is a diagonal length of the image display portion of said image modulation means.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Manabe (US Patent Number 6,404,552 B1) discloses a projection type display device constructed so that light source beams via a polarization beam splitter are separated of colors by a color separating/synthesizing optical system.

Sato (US Patent Number 6,456,447 B1) teaches a color separating prism, and projection display apparatus capable of always obtaining a shot image having an excellent contrast.

Fukami, et al. (US Patent Number 4,857,997) shows a color resolving prism system wherein the light beam imaged on the light-receiving surface is regularly reflected by the dichroic surface.


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Numazaki et al. (US Patent Number 6,227,670 B1) discloses a projection display apparatus having a prism for separating incident light into a plurality of light components and combining the plurality of modulated color components.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magda Cruz whose telephone number is (703)308-6367. The examiner can normally be reached on Monday through Thursday 8:00-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on (703)308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1782.


RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Magda Cruz
Patent Examiner
September 27, 2002